

CASE REPORT



An eye opener COVID-19 complication in oro-maxillofacial region: Case report

Gaurav Gupta¹, D. K. Gupta², Priyanka Gupta³, Neeraj Chandra⁴, Neelja Gupta²

¹Department of Preventive and Pediatric Dentistry, Jaipur Dental College, Wisdom Dental Clinics, Jaipur, Rajasthan, India, ²Wisdom Dental Clinics, Jaipur, Rajasthan, India, ³Department of Pedodontics, Govt. Dental College (RUHSCDS), Jaipur, Rajasthan, India, ⁴Department of Periodontics, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India

Keywords:

COVID-19, Oro-maxillofacial, Post-COVID

Correspondence:

Dr. Gaurav Gupta, Department of Preventive and Pediatric Dentistry, Jaipur Dental College, Wisdom Dental Clinics, Jaipur, Rajasthan, India. Email- dr.gauravgupta99@gmail.com

Received: 12 May 2021;

Accepted: 14 June 2021

doi: 10.15713/ins.jcri.329

Abstract

The aim of this report is to discuss an eye-opening case about the complication in oro-maxillofacial region in COVID-19 recovered youth. The aftermath of COVID infection lead to various complexities in multiple organs. Recurrent follow ups of such recovered patients are necessary to identify early dreadful effects and combat them in time. Hence, present study throws a light on one such post-COVID complication occurring in oro-maxillofacial region, its pathophysiology and treatment to overcome its worsening upshot.

Introduction

COVID-19 disease caused by SARS-CoV-2 Coronavirus is comparatively a new disease, with foreground being known on an impulsive basis about the natural history of the disease, particularly in terms of post-recovery events. After acute COVID-19 illness, recovered patients may continue to report broad categories of signs and symptoms including fatigue, body ache, cough, sore throat, and difficulty in breathing because of multiple organ involvement. As of today, there is little evidence of post-COVID sequel in oral cavity and further research is required which is being actively pursued. For follow-up care and well-being of all post-COVID recovering patients, comprehensive approaches are the need of time.^[1]

According to the WHO, people in the age group of 10–50 are more liable to get recovered from the disease since the mortality rate for this age category is well below 1%. Although the patients are well recovered from the infection, some of its aftereffects may have a significant lingering impact on these patients in their future. It is imperative to understand the possible outcome of COVID-19 recovered patients and rule out any other detrimental dental consequences as well, faced by them.^[2] Further knowledge is required to adequately care for patients post-recovery and to provide a framework of possible physical manifestations of the disease. As COVID-19 is causing more panic worldwide, it is crucial to get a comprehensive analysis of the post-recovery states of patients.

Case Report

A 32-year male with COVID-19 infection a month back visited the dental office to manifest his inability to eat from left side of the mouth and mobility in multiple left upper teeth. Patient notified a history of being admitted a month ago, treated for COVID-19 and recovered well thereafter. He was isolated, remained in quarantine and discharged after 14 days. Few days later, he was unable to eat from left side, but there was no pain or swelling. There was no history of fever, cough, or pain in the teeth.

Intra-oral examination

On Intra-oral examination, multiple discharging sinuses with mobile teeth were seen in left maxilla [Figure 1]. There was no extra-oral swelling present.

3D CT scan

- 3D CT scan [Figure 2] showed ill marginated permeative lesion in the left upper maxillary alveolus and hard palate with loss of natural bony architecture and associated multifocal cortical erosion, cortical thickening and irregularity of superior, medial, and anterior and inferior wall of left maxillary sinus

- Furthermore, there was loosening of left sided upper incisors, canine, and premolars
- Significant perilesional abnormal enhancing soft-tissue swelling with thickened gingival mucosa and associated fat stranding
- No definite collection/liquefied abscess was seen. Mucosal thickening with non-enhancing secretions causing complete opacification of left maxillary sinus and blocked osteometal complex
- Mucosal thickening and retained secretions also seen in bilateral ethmoid, sphenoid and right maxillary sinuses with

- opacification of bilateral concha bullosa. Right osteometal complex is narrowed but patent
- No abnormal intraorbital and intra cranial extension of disease noted
- No significant cervical lymphadenopathy. Mandible was normal
- Visualized cervical vertebrae were normal.

Diagnosis

Thus, 3D scan revealed a large irregular osteolytic lesion involving a major part of the left maxilla with maxillary sinus. It was suggestive of likely maxillary osteomyelitis. The differential diagnosis was of neoplastic origin. Mucosal thickening and retained secretions in sinuses was suggestive of Panrhinosinusitis. This was further needed to be correlated clinically and with further histopathological investigations.

Blood investigations

All his routine blood investigations came normal now. There was raised HbA1c, glycolated hemoglobin, and suggestive of previous COVID-19 infection. The early blood reports showed increased levels of random glucose, SGOT and SGPT suggesting the infection.

Treatment plan

Surgical extractions were recommended of the involved teeth along with curettage of the lesion.



Figure 1: Multiple pus discharging sinuses-labial view and palatal view



Figure 2: 3D-CT scan images

Treatment procedure: [Figures 3 and 4]

After mouth preparation with Povidone iodine rinse and swab, local anesthesia (2% lidocaine with 1:100,000 epinephrine) was

administered. Using 15c blade and bard parker handle, a sharp incision was made deep into bone. A sulcular incision in addition to two vertical releasing incisions were given, and a full-thickness

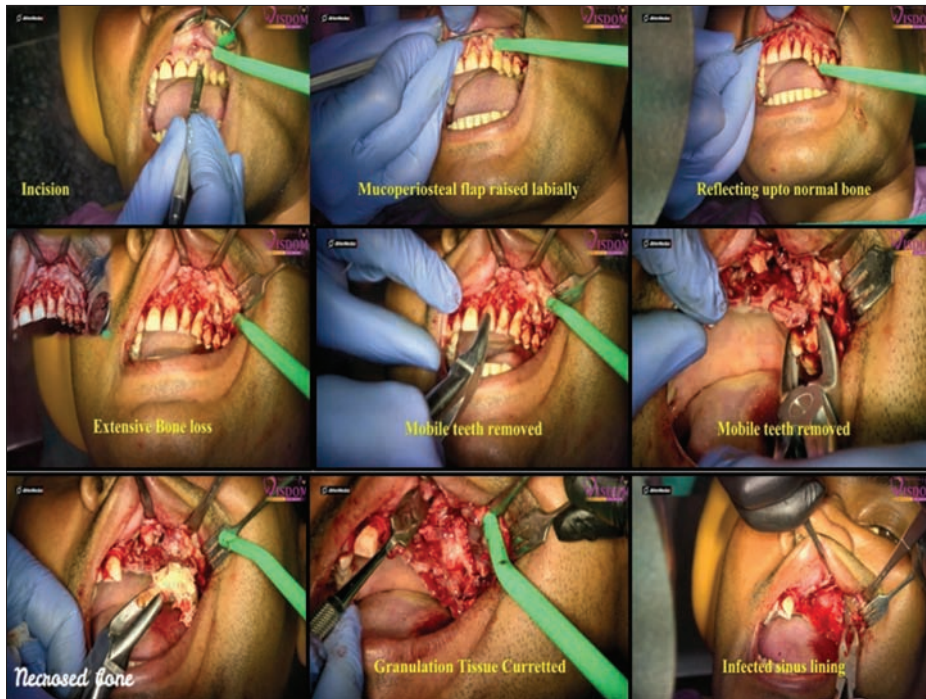


Figure 3: Treatment procedural steps: Incision and flap elevation till normal bone, extensive bone loss, extraction of mobile teeth, necrosed bone, curettage of granulation tissue, infected sinus lining

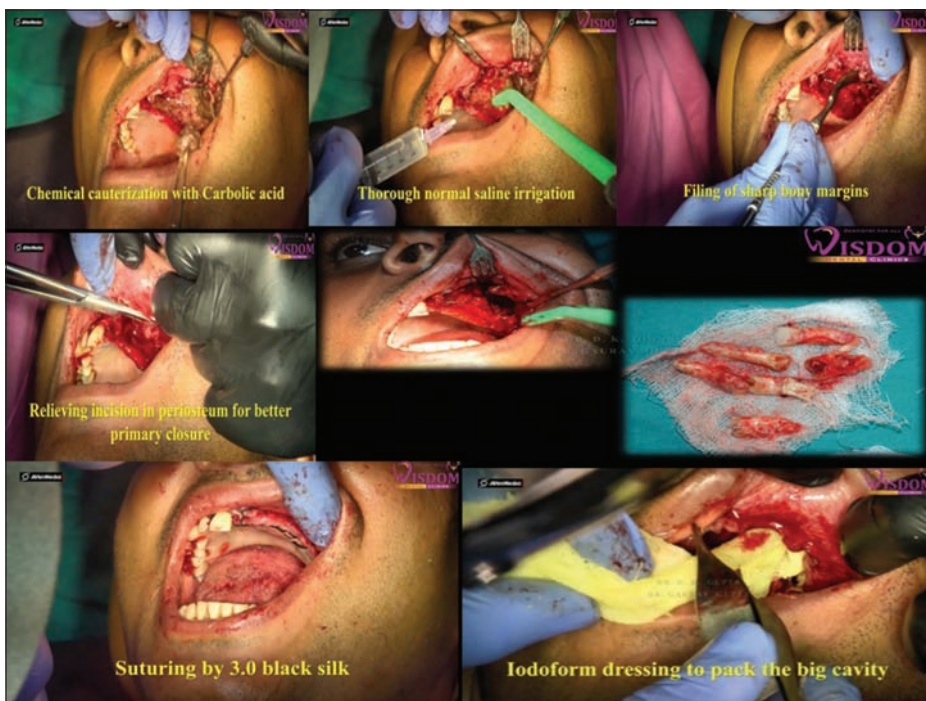


Figure 4: Treatment procedural steps: Chemical cauterization, saline irrigation, filing of sharp bony margins, relieving incision, surgical site with extracted teeth, iodoform dressing, suturing

mucoperiosteal flap was raised labially.^[3] After elevating the flap and inspecting, extensive bone loss was inspected. The flap was raised up to the normal bone. Affected mobile teeth were extracted, infected sinus lining was removed, curettage was done of the granulation tissue, and involved gingival was trimmed. This was followed by chemical cauterization with carbolic acid and thorough normal saline irrigation. Sharp bony margins were corrected by filing them. Furthermore, relieving incision was given in periosteum for better primary closure of the site. Iodoform dressing was given to pack the big cavity followed by suturing by 3.0 black silk.

Histopathological examinations

Histopathological examinations were done from multiple sites such as bone, granulation tissue, and sinus lining. The biopsy of single bony tissue piece of size 1.5 × 1.5 × 0.8 cm, showed acute suppurative inflammation with no evidence of fungus, granuloma, or malignancy.

The biopsy comprising fragments of mucosal tissue showed dense inflammatory infiltrate in stroma. Multiple, large, and vacuolated macrophages filled with bacilli were also seen. The histomorphology was consistent with Rhinoscleroma. There was no evidence of fungus, tuberculosis, or malignancy.

Moreover, biopsy comprising nasal mucosal tissues showed marked chronic non-specific suppurative inflammation. Again, no fungus or other specific pathology was noted.

Hence, the histopathological investigations were suggestive of avascular necrosis in maxilla, ruling out any fungal or malignant lesion.

Follow-up

On 3rd day anterior sutures removed and iodoform pack retrieved and sutured back [Figure 5]. Uneventful healing was seen after 10 days with 1 month follow-up as of now [Figure 6].

Discussion

This report presented a case of recovered SARS-Cov-2 infection, with oral complications developing after the infectious period of the disease. As for severe COVID-19 infection, Huang *et al.* found that such patients had greater concentrations of cytokines and chemokines than others proposing that the inflammatory storm was involved in infection severity.^[4] Inflammatory cytokines promote osteoclastogenesis by regulating RANK/RANKL/OPG axis in direct.^[5] Concretely, they promote RANK expression on monocytes and enhance bone resorption. Meanwhile, they restrain OPG and thus downregulate osteoblastic production. Hypoxia signaling is also an intervention factor for osteoclast differentiation and osteoblast formation. Literature notifies that hypoxia boosts the overproduction of pro-osteoclastogenic cytokines, including receptor activator of nuclear factor- κ B ligand (RANKL), vascular endothelial growth factor, macrophage colony-stimulating-factor, and leading to osteoclasts activation.^[3] Henceforth, SARS-CoV-2 induced hypoxemia is responsible to mediate bone destruction and



Figure 5: 3rd day anterior sutures removed and Iodoform pack retrieval, sutured back



Figure 6: Follow-up after 10 days

disturb bone matrix. It is speculated that cytokine storm-induced systemic inflammation and immunologic dissension may end to increase bone resorption and restrain bone formation in bone marrow microenvironment.^[6]

Another possible etiology relates to clot formation in the blood supply of involved maxilla and sinus. As it has been established, COVID-19 infections are marked by blood clot formations in different parts of body.

Severe COVID-19 acute infection, in association with therapeutic measures, could potentially contribute to negative oral health outcomes. This may lead to various opportunistic fungal infections, xerostomia associated with decreased salivary flow, gingivitis, and ulcerations because of impaired immune system and/or susceptible oral mucosa. It is worth remarking that cytokine storm caused by dysregulated humoral and cellular mechanisms can aggravate existing autoimmune conditions within the oropharyngeal area. An additional post-acute care to re-copup the COVID-19 recovering persons, from the primary and concomitant infection are essential. In addition, close

monitoring of their oral health, particularly during transition from hospital to other care settings and homes are recommended.^[7]

Conclusion

To the best of our knowledge, this is the rare reported case of complication in oro-maxillofacial region in COVID-19 recovered patients. Awareness of such oral complication is important because the lesions may worsen leading to more serious clinical scenario.

Nevertheless, the overall impact of COVID-19 on oral health seems to be multi-directional, immune-related and most probably indirect, acting through various routes, reflecting the pathological nature of coronavirus respiratory track invasion through mucous membranes.^[7] People who have recovered from COVID-19 should be more careful in maintaining and monitoring their health status. They should be in regular monitoring for the future complications that may arise after their recovery. Additional studies need to investigate and assess more about the oro-maxillofacial complications in detail in coming times.

References

1. Brandao TB, Gueiros LA, Melo TS, Prado-Ribeiro AC, Nesrallah AC, Prado GV, *et al.* Oral lesions in patients with

- SARS-CoV-2 infection: Could the oral cavity be a target organ. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2021;131:e45-51.
2. Balachandar V, Mahalaxmi I, Subramaniam M, Kaavya J, Kumar NS, Laldinmawii G, *et al.* Follow-up studies in COVID-19 recovered patients - is it mandatory? *Sci Total Environ* 2020;729:139021.
3. Hiraga T. Hypoxic microenvironment and metastatic bone disease. *Int J Mol Sci* 2018;19:3523.
4. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 395;2020:497-506.
5. de Castro LF, Burke AB, Wang HD, Tsai J, Florenzano P, Pan KS, *et al.* Activation of RANK/RANKL/OPG pathway is involved in the pathophysiology of fibrous dysplasia and associated with disease burden. *J Bone Miner Res* 2019;34:290-4.
6. Tao H, Ge G, Li W, Liang X, Wang H, Li N, *et al.* Dysimmunity and inflammatory storm: Watch out for bone lesions in COVID-19 infection, *Med Hypotheses* 2020;145:110332.
7. Dziejdz A, Wojtyczka R. The impact of coronavirus infectious disease 19 (COVID-19) on oral health. *Oral Dis* 2020;27:1-4.

How to cite this article: Gupta G, Gupta DK, Gupta P, Chandra N, Gupta N. An eye opener COVID-19 complication in oro-maxillofacial region: Case report. *J Adv Clin Res Insights* 2021;8(3):48-52.

This work is licensed under a Creative Commons Attribution 4.0 International License. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> © Gupta G, Gupta DK, Gupta P, Chandra N, Gupta N. 2021